**ADTA 5900/5770.501: Generative AI with LLMs**

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**Assignment 4**

**PART I: Generative AI System for Business (20 Points)**

**Decision on What Type of Business Organization**

**TO-DO**

* Each group is assumed to be an AI system development group in a business organization.
* Brainstorm and discuss with group members to decide on a business organization, such as a company or a corporation, for which the group will develop a generative AI system.

**Answer:**

Having an efficient inventory and warehouse management system is a key driver for a successful business.

With the vision of developing a Question and Answer system for making the data available for the users instead of depending on a database system and the technical expertise required to query data from it.

The team’s goal for the semester project is to build a Question-and-Answer search system that can help the users to find answers and serve as a source of information with respect to inventory/warehouse management.

**Company**: Fishbowl

**PART II: Business and Technical Requirements of the System (30 Points)**

**TO-DO**

* Based on the business type of the business entity:
  + Document the **business values** of the generative AI system to create
    - Why does the company want to develop a generative AI system?
* Document the **business requirements** of the generative AI system to create
  + In other words, document the business goals or objectives that the organization tries to achieve with this generative AI system.
* Document the technical requirements of the generative AI system to create.
* For example:
  + Which AI platform will be used to create the generative AI system?
* GCP: Vertex AI
  + Which large language model (LLM)?
  + Which generative AI platform?

**Answer:**

* **Business Value:** Why does the company want to develop a Generative AI system
* **Operational Efficiency:** Employees can access critical information faster with the Q&A system and save time on requesting and receiving data from the respective departments.
* **Cost Savings:** Reducing dependency on human resources for data drives savings.
* **Competitive advantage and Innovation:** When decisions can be made quickly, operational efficiency increases, and the organization achieves a competitive advantage over its competitors.
* **Compliance and Risk Management:** The Q&A system can help to reduce legal risks by keeping all the up-to-date information readily available for audits and policy enforcement.
* **Business requirements:** Business goals or objectives that the organization tries to achieve with this generative AI system
  + **Enhance user experience:** The required information is readily available with the Q&A system making it a seamless experience for the users to access information.
  + **Workload reduction on Employees:** Employees can focus on actual tasks rather than looking for information which reduces the workload.
  + **Faster decision making with data:** As data is available seamlessly with accuracy, decisions can be made faster. This drives productivity and increases efficiency.
  + **Question and answer Capability:** LLM based system should be able to answer the questions with accuracy.
  + **Real time system:** The system will be providing real time data and information.
* **Technical Requirements:** 
  + **GCP:** We will be using Google Cloud Platform to build this Q&A system.
    - **Bucket:** We will be using GCP buckets to keep the data (100 Pdfs) and use the same to build the Vector database.
  + **Vertex AI:** We plan to use Google’s Vertex AI platform for building the generative AI Question and Answer system. It is a fully managed service and easily pluggable in the Google Collab.
  + **LangChain:** LangChain is a framework having opensource components which enable application development for large language Models. It also provides seamless integration for third party tools. It provides platform for “development”, “productionization” and “deployment”, hence streamlining the entire application life cycle.

**PART III: Data and Cloud Data Storage Requirements (40 Points)**

**7.1 Create GCP Cloud Storage Bucket TO-DO**

* **Access GCP Storage**
* **Create one bucket:** 
  + **BUCKET Name = adta5770-docs-folder**

* **Inside the bucket, create a new subfolder named “documents,” in which another subfolder named**

**“pdfs” is created.**

* **Capture the screenshot of the last subfolder like the following figure:**

A screenshot of a computer

AI-generated content may be incorrect.

* In the figure, in the bucket docs-genai-folder-1, there exists a subfolder named “documents” in which a sub-sub-folder “nlp-vip-pdfs” is created.

**Answer:**

We have accessed GCP platform and created a bucket “**adta5770-docs-folder-group3**”**.**

**Bucket:** “**adta5770-docs-folder-group3**”**.**

**Folder: “documents”**

**Sub-Folder: "pdfs”**

The screenshot below shows the bucket, folder and sub-folder.

A screenshot of a computer

AI-generated content may be incorrect.

**7.2 Upload Documents to GCP Bucket**

**TO-DO**

**• Upload the collected PDFs to the cloud folder: BUCKET 1/documents/pdfs • Access the folder and take a screenshot of its contents like the following one:**

**Answer:**

We have uploaded the pdf to the sub-folder in the bucket as shown in the below screenshot.

A screenshot of a computer

AI-generated content may be incorrect.

**PART IV: Groupwork Evaluation (10 Points)**

**SUBMISSION REQUIREMENTS: PART IV:**

**Provide the information about your group activities by answering the following questions:**

1. **What group do you belong to? (Provide the group number)**

**Answer:**

**Group 3**

1. **Who are the members of your group?**

**Answer:**

**Sonali Sabnam**

**Sonam Pohuja**

**Young Yu**

1. **Have the members organized meetings (ONLINE or IN-PERSON) to work on HW 4?**

**Answer:**

All 3 members

1. **If YES to #3, which members, including the student himself/herself, showed up in the meeting?**

**Answer:**

All three members

1. **If YES to #3, do all the members make reasonable efforts to participate actively in the group work?**

**Answer:**

Yes. All members participate enthusiastically.

1. **If NO to #5, do you have any opinions to share about the group?**

**Answer:**

All the members are awesome and enthusiastically contribute in all the activities.

**Reference:**

[**https://www.langchain.com/**](https://www.langchain.com/)

[**https://python.langchain.com/docs/introduction/**](https://python.langchain.com/docs/introduction/)